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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application]This invention relates to the palette for cargo work used for conveyance and storage of cargo.

[0002]

[Description of the Prior Art]Although the wooden palettes which occupy the most among the palettes which have spread widely now were strong, it is heavy and also there was a problem of making precious forest resources useless.

[0003]Although metal palettes were lighter than wooden, they were high-cost, and I was rust-easy, and there was a problem of not being sanitary.

[0004]Although the palette made of synthetic resins, such as high density polyethylene and polypropylene, did not carry out ***** corrosion but was sanitary, it could not say that it was light still enough, but there was a problem that manufacture took trouble rather than anything. For example, after the thing made of a synthetic resin fabricates independently the deck board put on cargo, and the leg supporting this, connect it with adhesives or a bolt and it assembles a palette, but. This assembly process takes trouble, and a bolt loosens, or it is easy to be by the bonding strength by adhesives being insufficient, and great time and labor were needed for avoiding this. The metallic mold further for shaping was also complicated, and it had become a factor in which expense increases. In addition, the palette made of a synthetic resin also had the problem that disposal was difficult that it is hard to burn.

[0005]

[Problem(s) to be Solved by the Invention]The palette of this invention aims at it being sanitary, and a manufacturing cost being also cheap, being [it is lightweight and strong enough and not carrying out ***** corrosion, but] suitable for mass production moreover, and being able to carry out the incineration disposal also of the abandonment simply in view of the problem of such a conventional palette.

[0006]

[Means for Solving the Problem]A palette of claim 1 of this invention impregnates a nonwoven fabric made from vegetable fiber with resin, forms a sheet shaped substrate, it collapses a freight mounting surface of the substrate upper surface concerned, and projects a leg of a number in one suitably on the substrate bottom, and it forms and constitutes fork insertion space between these legs and legs.

[0007]A palette of claim 2 impregnates a nonwoven fabric made from vegetable fiber

with resin, and forms a sheet shaped substrate, By forming a reinforcement ridge which connects the slant faces of a concave which collapse a freight mounting surface of the substrate upper surface concerned, and a parallel concave of several sections is formed, and upheaves inside of each concave several places, and faces, A leg of a sequence of numbers which stands in a row in the length direction of said concave is projected in one on the substrate bottom, and fork insertion space is formed and constituted between sequences of a leg with which said leg is connected.

[0008]A palette of claim 3 impregnates a nonwoven fabric made from vegetable fiber with resin, forms a sheet shaped substrate, collapse a freight mounting surface of the substrate upper surface concerned, and project a leg of a number in one suitably on the substrate bottom, and. Fork insertion space is formed between these legs and legs, a freight mounting surface located in the upper surface of said fork insertion space is collapsed more shallowly than said leg, and a reinforcement cavity is formed and constituted.

[0009]And a process of this invention of claim 4 impregnates a nonwoven fabric made from vegetable fiber with resin, forms a sheet shaped substrate in it, then, carries out heat pressing to it on both sides of said substrate with a metallic mold from the upper and lower sides, and molds a palette.

[0010]

[Function]Although the palette of claim 1 of this invention carries the cargo which inserted the fork of the fork lift truck in the fork insertion space, and was put on the freight mounting surface of the substrate upper surface and keeps it in a warehouse etc., Since a reinforcement ridge is formed in the concave which collapsed the upper surface of the substrate in the invention of claim 2 and a reinforcement cavity is formed in a freight mounting surface in the invention of claim 3, even if the substrate of a palette is not thick, the load of cargo can be supported well and it does not crash [a palette changes or].

[0011]

[Example]The example of the palette manufacturing method of this invention is as follows.

[0012]The introduction coconut, a coconut, or a hempen vegetable fiber raw material is opened with a fibrillated film machine, and it is made a felt-like nonwoven fabric. The fruit of a coconut or a coconut is opened, after crushing by a crusher and breaking in pieces with a grinder further. A coconut uses the envelope of the husks portion after taking main copra.

[0013]As for 100-300 mm and thickness, 0.2-1.5 mm is [the length of vegetable fiber] preferred. As for a nonwoven fabric, it is preferred that textiles become entangled with nondirectional and substrate density is compressed into 3-10 mm of board thickness by a cubic meter in 300-1000kg /.

[0014]Next, it impregnates with the liquefied thermosetting resin of 10 to 35% of the weight per this 1.0-3.0kg/square meter nonwoven fabric, for example, phenol resin, an acrylic resin, urethane resin, urea resin, melamine resin, or reseau luminol resin uniformly, and a sheet shaped substrate is formed. At this time, viscosity will fall and liquefied thermosetting resin will sink into textiles easily, if resin and a solvent are diluted with a weight ratio from 1:1 to 1:2 with solvents, such as water or alcohol.

[0015]In order to impregnate liquefied resin, it may spray by a high pressure air from

both sides of a nonwoven fabric, but if it extracts with a press roll after ****(ing) in resin, a molding substrate with sufficient rigidity will be obtained easily. In this case, if the mill opening of the press roll of one pair of upper and lower sides is adjusted to extensive **, the amount of being impregnated of resin can be adjusted. The intensity of a substrate can be freely set up by changing the quantity of a solvent and adjusting dilution magnification.

[0016]Not only thermosetting but thermoplastic resin, for example, vinyl acetate, polypropylene, polyethylene, olefin system resin, etc. may be sufficient as the resin with which it impregnates. Although it may not restrict liquefied but may be powdered, the more liquefied one to your making it impregnated uniformly is convenient.

[0017]Next, as aforementioned, from the upper and lower sides, heat pressing of the sheet shaped substrate impregnated with resin is carried out, and it is molded by a metallic mold.

[0018]As for 160 ** - 230 **, and time, for 1.0 to 2.0 minutes is [the temperature of a metallic mold] good, and ten to 50 kgf/a square centimeter is preferred for welding pressure. Since the textiles of a nonwoven fabric become entangled in the non-direction, to the tension and bending of all directions, they are strong and can do ***** with a metallic mold here. Molding time can be shortened, if a 150-160 ** drying furnace is made to carry out predrying through a substrate and dilution ingredients, such as water, are evaporated, before molding by a metallic mold.

[0019]Drawing 1 and drawing 2 show the completed whole palette. 1 is a sheet shaped based material of the rectangle which impregnated nonwoven fabrics made from vegetable fiber, such as a coconut, a coconut, and hemp, with resin. 2 shows the freight mounting surface of the upper surface of the substrate 1. By a front view abbreviation V character-like concave, 3 collapses the freight mounting surface 2 and is formed. The concave 3 is arranged in parallel with a total of five-section cross direction, and connects the slant faces in which the inside of each concave 3 is upheaved five places, and the reinforcement ridge 4 is formed and which the concave 3 faces by this. The height of the reinforcement ridge 4 is lower than the depth of the concave 3, therefore the upper surface is lower than the freight mounting surface 2.

[0020]Thus, by keeping an interval and forming the reinforcement ridge 4 in the concave 3, the leg 5 which stands in a row in the length direction of the concave 3 is projected at the substrate pars basilaris ossis occipitalis.

[0021]6 and 6 show the fork insertion space of one pair of right and left formed between the sequence and sequence which a leg arranges.

[0022]The reinforcement cavity 7 is formed in the freight mounting surface 2 in the direction which intersects perpendicularly in the length direction of the concave 3. The reinforcement cavity 7 is arranged in the middle of the adjoining reinforcement ridges 4 and 4 so that it may not rank with the reinforcement ridge 4 and a single tier. The reinforcement cavity 7 has the depth shallower than the leg 5 which caves in from the freight mounting surface 2.

[0023]Each side which forms the concave 3 of the leg 5, the reinforcement ridge 4, and the reinforcement cavity 7 here is made to incline loosely at an angle smaller than 90 degrees altogether to the flat freight mounting surface 2.

[0024]The both sides part of the substrate 1 made it crooked downward, and also carries out inflection of the edge side to the method of outside, and forms the hem parts 8 and 8.

The hem parts 8 and 8 are located on the same flat surface as the bottom of the leg 5.

[0025]9 is the bore for scuppers dug on the bottom of the leg 5, and when caught outdoors in rain, it prevents water collecting in the leg 5.

[0026]In order to use this palette, put cargo on the freight mounting surface 2 of a substrate upper surface, insert the fork (not shown) of a fork lift truck in the fork insertion space 6 and 6, and carry cargo the whole palette, but. The side where the leg 5, the reinforcement ridge 4, and the reinforcement cavity 7 inclined distributes well, and supports the load of cargo.

[0027]In the palette which uses the textiles of a coconut, a coconut, or hemp as a result of an experiment, when there was a weight of 2.0kg/square meter also in which textile materials, there was rigidity which is equal to use enough practically.

[0028]The palette which is not used is kept in piles as drawing 4. In order for the legs of an up-and-down palette to fit in each other at this time, it can accumulate on the whole at ***** and there is also no possibility that the palette with which the upper part was loaded may slide down.

[0029]

[Effect of the Invention]In short by this invention, the substrate of a palette is formed with vegetable fiber, such as a coconut, a coconut, or hemp.

Therefore, as compared with the conventional palette, it is overwhelmingly lightweight, and can contribute to the cost reduction of pallet service.

Since these vegetable fiber becomes entangled in the non-direction when it is made into a nonwoven fabric, the palette of a product demonstrates tough rigidity to the tension and bending of all directions of front and rear, right and left. Since vegetable fiber is porosity, it is well impregnated with resin and its intensity is exceptionally stronger still. Since it is easy to impregnate resin, manufacture is easy. Since the raw material of vegetable fiber grows wild abundantly and cultivation is also possible again, the manufacturing cost of resources is closely cheap infinitely. Since a small quantity is sufficient and vegetable fiber occupies a main part, the resin with which it is moreover impregnated can carry out incineration disposal of the useless article of the palette which it could burn and was damaged simply.

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CLAIMS

[Claim(s)]

[Claim 1] A palette which impregnates a nonwoven fabric made from vegetable fiber with resin, forms a sheet shaped substrate, and collapse a freight mounting surface of the substrate upper surface concerned, and a leg of a number is suitably projected in one on the substrate bottom, and forms fork insertion space between these legs and legs.

[Claim 2] By forming a reinforcement ridge which connects the slant faces of a concave which impregnate a nonwoven fabric made from vegetable fiber with resin, and form a sheet shaped substrate, collapse a freight mounting surface of the substrate upper surface concerned, and a parallel concave of several sections is formed, and upheaves inside of each concave several places, and faces, A palette which forms fork insertion space between sequences of a leg with which a leg of a sequence of numbers which stands in a row in the length direction of said concave is projected in one on the substrate bottom, and said leg is connected.

[Claim 3] Impregnate a nonwoven fabric made from vegetable fiber with resin, form a sheet shaped substrate, collapse a freight mounting surface of the substrate upper surface concerned, and project a leg of a number in one suitably on the substrate bottom, and. A palette which forms fork insertion space between these legs and legs, collapses more shallowly than said leg a freight mounting surface located in the upper surface of said fork insertion space, and forms a reinforcement cavity.

[Claim 4] A palette manufacturing method impregnating a nonwoven fabric made from vegetable fiber with resin, forming a sheet shaped substrate in it, then carrying out heat pressing to it on both sides of said substrate with a metallic mold from the upper and lower sides, and molding a palette.

[Translation done.]